Honeywell

ST 3000 Smart Transmitter Series 900 Flange Mounted Liquid Level Models Specifications
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Introduction

In 1983, Honeywell introduced the first Smart Pressure Transmitter— the ST 3000®. In 1989, Honeywell launched the first all digital, bi-directional protocol for smart field devices. Today, its ST 3000 Series 900 Flange-mount Pressure Transmitters continue to bring proven "smart" technology to a wide spectrum of pressure measurement applications. Flange-mount transmitters are offered with a variety of tank connections including ANSI flanges. Applications include gauge pressure measurement in pressure vessels in the chemical industry as well as level applications in both the chemical and hydrocarbon processing industries with either wet or dry legs on the low side. Versatility is made possible though compound characterization of the meter body as well as the ability to measure a broad range of differential pressures.

Models		
STF924	0 to 400 inH_2O	0 to 1,000 mbar
STF932	0 to 100 psi	0 to 7 bar
STF92F	0 to 400 inH_2O	0 to 1,000 mbar
STF93F	0 to 100 psi	0 to 7 bar

All ST 3000 transmitters can be ordered to provide one of the following output communication options. When digitally integrated with Honeywell's Process Knowledge System™, EXPERION PKS™, ST 3000 instruments provide a more accurate process variable as well as advanced diagnostics. Honeywell's cost-effective ST 3000 S900 transmitters lead the industry in Stability and Reliability.

ST 3000 S900 Transmitter Benefits
Stability = ±0.01% per year
Reliability = 470 years MTBF

Figure 1—On the left is Model STF92F and STF93F and on the right is Model STF924 and STF932 (Extended Diaphragm). All Series 900 Flange Mounted Pressure Transmitters feature proven piezoresistive sensor technology.

The devices provide comprehensive self-diagnostics to help users maintain high uptime, meet regulatory requirements, and attain high quality standards. S900 transmitters allow smart performance at analog prices. Accurate, reliable and stable, Series 900 transmitters offer greater turndown ratio than conventional transmitters.

Communications options
4-20 mA
Honeywell Digitally Enhanced (DE)
HART® (versions 5.x or 6.x)
FOUNDATION™ Fieldbus

Description

The ST 3000 transmitter can replace any 4 to 20 mA output transmitter in use today and operates over a standard two-wire system.

The measuring means is a piezoresistive sensor, which actually contains three sensors in one. It contains a differential pressure sensor, a temperature sensor, and a static pressure sensor.

Microprocessor-based electronics provide higher span-turndown ratio, improved temperature and pressure compensation, and improved accuracy.

The transmitter's meter body and electronics housing resist shock, vibration, corrosion, and moisture. The electronics housing contains a compartment for the single-board electronics, which is isolated from an integral junction box. The single-board electronics is replaceable and interchangeable with any other ST 3000 Series 100 or Series 900 model transmitters.

Like other Honeywell transmitters, the ST 3000 features two-way communication and configuration capability between the operator and the transmitter through several Honeywell field-rated portable configuration devices, including the Smart Field Communicator (SFC) and the Multiple Communication Configurator (MC ToolKit). While both are made for in-field use, the MC Toolkit also can be ordered for use in intrinsically safe environments.

The SCT 3000 Smartline® Configuration Toolkit provides an easy way to configure instruments using a personal computer. The toolkit enables configuration of devices before shipping or installation. The SCT 3000 can operate in the offline mode to configure an unlimited number of devices. The database can then be loaded down-line during commissioning.

Features

- Choice of linear or square root output conformity is a simple configuration selection.
- Direct digital integration with Experion PKS and other control systems provides local measurement accuracy to the system level without adding typical A/D and D/A converter inaccuracies.
- Unique piezoresistive sensor automatically compensates input for temperature and static pressure. Added "smart" features include configuring lower and upper range values, simulating accurate analog output, and selecting preprogrammed engineering units for display.
- Smart transmitter capabilities with local or remote interfacing means significant manpower efficiency improvements in commissioning, start-up, and ongoing maintenance functions.
- ST 3000 transmitters feature full Dual-Seal certification based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.01 requirements without the use of additional seal protection elements.
- ST 3000 transmitters are available fully compliant to SIL 2/3 requirements as a standard option.

Advanced Diagnostics

ST 3000 is now available for both HART® 6 and Foundation™ Fieldbus with advanced diagnostics that minimize unplanned plant outages, minimize maintenance costs and by providing the industry's most reliable transmitter.

- Provide advanced warning of possible failure events and avoid costly shutdowns.
- Three levels of failure reporting
- Comprehensive list of on-board diagnostics (Ref. ST 3000 User manual with HART® 6, 34-ST-25-17 Rev: June 09 and Foundation™ Fieldbus option manual 34-ST-25-15 Rev: June09)

Operating Conditions – All Models

Parameter	Reference Condition (at zero static)		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature	25±1	77±2	-40 to 85	-40 to 158	-40 to 85	-40 to 185	-55 to 125	-67 to 257
Meter Body Temperature	25±1	77±2	-40 to 110*	-40 to 230*	-40 to 125	-40 to 257	-55 to 125	-67 to 257
Process Interface Temperature STF924, STF932 only	25±1	77±2	-40 to 110**	-40 to 230**	-40 to 175†	-40 to 350†	-55 to 125	-67 to 257
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Minimum Pressure mmHg absolute	Atmospheric		25		2 (short term) ††			
Minimum Pressure inH_2O absolute	Atmospheric		13		1 (short term) ††			
Supply Voltage, Current, and Load Resistance	**Voltage Range:** 10.8 to 42.4 Vdc at terminals **Current Range:** 3.0 to 21.8 mA **Load Resistance:** 0 to 1,440 ohms (as shown in Figure 2)							

* For model STF932 with CTFE fill fluid, the rating is –15 to 110°C (5 to 230°F); for models STF92F and STF93F with CTFE fill fluid, the rating is –15 to 70°C (5 to 158°F).

** For model STF932 with CTFE fill fluid, the rating is –15 to 110°C (5 to 230°F).

† For CTFE fill fluid, the maximum temperature rating is 150°C (300°F).

†† Short term equals 2 hours at 70°C (158°F)

Maximum Allowable Working Pressure (MAWP)[3,4]

(ST 3000 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)

STF 924, STF 932	Flange Material	Ambient Temperature -29 to 38°C [-20 to 100°F]	Maximum Meterbody Temperature 125°C [257°F]	Process Interface Temperature 175°C [350°F]
ANSI Class 150 psi [bar]	Carbon Steel	285 [19.6]	245 [16.9]	215 [14.8]
	304 S.S.	275 [19.0]	218 [15.0]	198 [13.7]
	316 S.S.	275 [19.0]	225 [15.5]	205 [14.1]
ANSI Class 300 psi [bar]	Carbon Steel	740 [51.0]	668 [46.0]	645 [44.5]
	304 S.S.	720 [49.6]	570 [39.3]	518 [35.7]
	316 S.S.	720 [49.6]	590 [40.7]	538 [37.1]
DN PN40 psi [bar]	Carbon Steel	580 [40.0] [1]	574 [39.6]	559 [38.5]
	304 S.S.	534 [36.8] [1]	419 [28.9]	385 [26.5]
	316 S.S.	534 [36.8] [1]	434 [29.9]	399 [27.5]
STF92F, STF93F ANSI Class 150 psi [bar]	316L Stainless Steel	230 [15.9]	185 [12.8]	No rating at this temp

[1] Ambient Temperature for DN PN40 is –10 to 50 C [14 to 122 F]

[3] MAWP applies for temperature range -40 to 125°C. However, Static Pressure Limit is de-rated to 3,000 psi from -26°C to -40°C. Use of graphite o-rings de-rates transmitter to 3,625 psi. Use of adaptor with graphite o-rings de-rates transmitter to 3,000 psi.

[4] Consult factory for MAWP of ST 3000 transmitters with CSA approval.

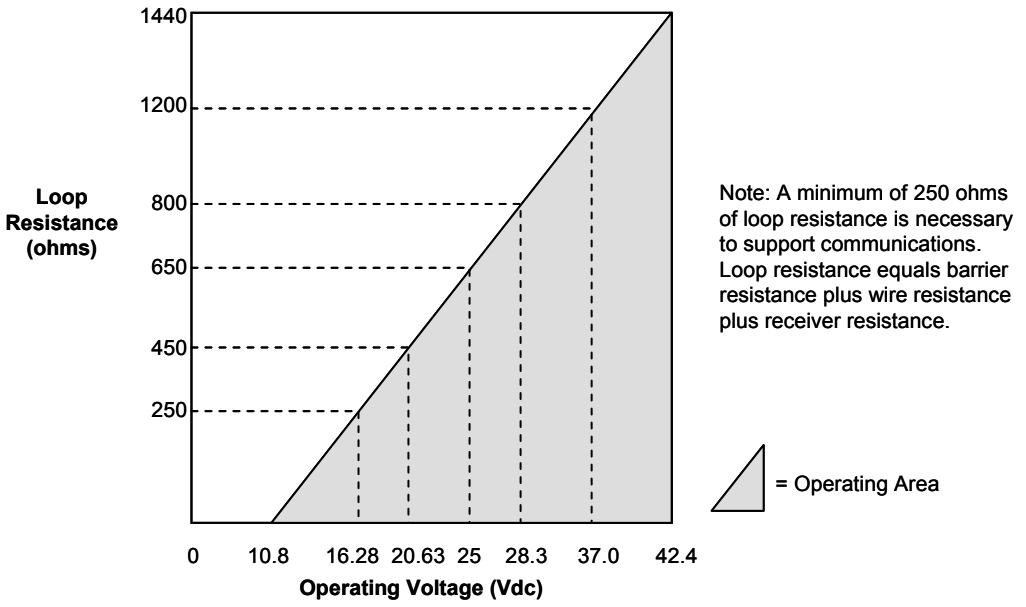


Figure 2 —Supply voltage and loop resistance chart

Performance Under Rated Conditions* - Model STF924 (0 to 400 inH2O/1,000 mbar)

Parameter	Description
Upper Range Limit inH_2O mbar	400 (39.2°F/4°C is standard reference temperature for inH2O range.) 1,000
Minimum Span inH_2O mbar	4 10
Turndown Ratio	100 to 1
Zero Elevation and Suppression	No limit except minimum span within ±100% URL. Specifications valid from –100% to + 100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION™ Fieldbus use Digital Mode specifications.* • *For HART® use Analog Mode specifications.*	**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH_2O), accuracy equals: $\pm\left[0.05+0.05\left(\frac{25\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.05+0.05\left(\frac{62.5\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH_2O), accuracy equals: $\pm\left[0.025+0.05\left(\frac{25\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.025+0.05\left(\frac{62.5\ mbar}{span\ mbar}\right)\right]$ in % of span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.2625% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.0125+0.25\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.0125+0.25\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.25% of span. For span below reference point (50 inH_2O), effect equals: $\pm 0.25\left(\frac{50\ inH_2O}{span\ inH_2O}\right)$ or $\pm 0.25\left(\frac{125\ mbar}{span\ mbar}\right)$ in % of span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.50% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.25+0.25\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.25+0.25\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.475% of span. For span below reference point (50 inH_2O), effect equals: $\pm\left[0.225+0.25\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.225+0.25\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Zero Static Pressure Effect per 300 psi (20 bar)	±0.2125% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.0125+0.20\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.0125+0.20\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Combined Zero and Span Static Pressure Effect per 300 psi (20 bar)	±0.40% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.20+0.20\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.20+0.20\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Stability	±0.015% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STF932 (0 to 100 psi/7 bar)

Parameter	Description
Upper Range Limit **psi** **bar**	100 7
Minimum Span **psi** **bar**	1 0.07
Turndown Ratio	100 to 1
Zero Elevation and Suppression	No limit except minimum span within ±100% URL. Specifications valid from –100% to + 100% URL.
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION™ Fieldbus use Digital Mode specifications.* • *For HART® use Analog Mode specifications.*	**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm\left[0.05+0.05\left(\frac{20\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.05+0.05\left(\frac{1.4\ \text{mbar}}{\text{span mbar}}\right)\right]$ in % of span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm\left[0.025+0.05\left(\frac{20\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.025+0.05\left(\frac{1.4\ \text{mbar}}{\text{span mbar}}\right)\right]$ in % of span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.2625% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.0125+0.25\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.0125+0.25\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span **In Digital Mode:** ±0.25% of span. For URV below reference point (30 psi), effect equals: $\pm 0.25\left(\frac{30\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.25\left(\frac{2\ \text{bar}}{\text{span bar}}\right)$ in % of span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.50% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.25+0.25\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.25+0.25\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span **In Digital Mode:** ±0.475% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.225+0.25\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.225+0.25\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Zero Static Pressure Effect per 300 psi (20 bar)	±0.2125% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.0125+0.20\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.0125+0.20\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Span Static Pressure Effect per 300 psi (20 bar)	±0.40% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.20+0.20\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.20+0.20\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Stability	±0.04% of URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STF92F (0 to 400 inH2O/25 mbar)

Parameter	Description
Upper Range Limit **inH_2O** **mbar**	400 (39.2°F/4°C is standard reference temperature for inH2O range.) 1000
Minimum Span **inH_2O** **mbar**	4 10
Turndown Ratio	100 to 1
Zero Elevation and Suppression	–5 to +100% URL
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION™ Fieldbus use Digital Mode specifications.* • *For HART® use Analog Mode specifications.*	**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH2O), accuracy equals: $\pm\left[0.05+0.05\left(\frac{25\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.05+0.05\left(\frac{62.5\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (25 inH2O), accuracy equals: $\pm\left[0.025+0.05\left(\frac{25\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.025+0.05\left(\frac{62.5\ mbar}{span\ mbar}\right)\right]$ in % of span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.1625% of span. For URV below reference point (50 inH2O), effect equals: $\pm\left[0.0125+0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.0125+0.15\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.15% of span. For URV below reference point (50 inH2O), effect equals: $\pm 0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)$ or $\pm 0.15\left(\frac{125\ mbar}{span\ mbar}\right)$ in % of span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.25% of span. For URV below reference point (50 inH2O), effect equals: $\pm\left[0.10+0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.10+0.15\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span **In Digital Mode:** ±0.225% of span. For URV below reference point (50 inH2O), effect equals: $\pm\left[0.075+0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.075+0.15\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Zero Static Pressure Effect per 1,000 psi (70 bar)	±0.1625% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.0125+0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.0125+0.15\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Combined Zero and Span Static Pressure Effect per 1,000 psi (70 bar)	±0.30% of span. For URV below reference point (50 inH_2O), effect equals: $\pm\left[0.15+0.15\left(\frac{50\ inH_2O}{span\ inH_2O}\right)\right]$ or $\pm\left[0.15+0.15\left(\frac{125\ mbar}{span\ mbar}\right)\right]$ in % of span
Stability	±0.015% URL per year

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316 Stainless Steel barrier diaphragm.

Performance Under Rated Conditions* - Model STF93F (0 to 100 psi/7 bar)

Parameter	Description
Upper Range Limit **psi** **bar**	100 7
Minimum Span **psi** **bar**	1 0.07
Turndown Ratio	100 to 1
Zero Elevation and Suppression	–5 to +100% URL
Accuracy (Reference – Includes combined effects of linearity, hysteresis, and repeatability) • *Accuracy includes residual error after averaging successive readings.* • *For FOUNDATION™ Fieldbus use Digital Mode specifications.* • *For HART® use Analog Mode specifications.*	**In Analog Mode:** ±0.10% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm\left[0.05+0.05\left(\frac{20\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.05+0.05\left(\frac{1.4\ \text{mbar}}{\text{span mbar}}\right)\right]$ in % of span **In Digital Mode:** ±0.075% of calibrated span or upper range value (URV), whichever is greater, terminal based. For URV below reference point (20 psi), accuracy equals: $\pm\left[0.025+0.05\left(\frac{20\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.025+0.05\left(\frac{1.4\ \text{mbar}}{\text{span mbar}}\right)\right]$ in % of span
Zero Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.1625% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.0125+0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.0125+0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span **In Digital Mode:** ±0.15% of span. For URV below reference point (30 psi), effect equals: $\pm 0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)$ or $\pm 0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)$ in % of span
Combined Zero and Span Temperature Effect per 28°C (50°F)	**In Analog Mode:** ±0.25% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.10+0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.10+0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span **In Digital Mode:** ±0.225% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.075+0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.075+0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Zero Static Pressure Effect per 1,000 psi (70 bar)	±0.1625% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.0125+0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.0125+0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Combined Zero and Span Static Pressure Effect per 1,000 psi (70 bar)	±0.30% of span. For URV below reference point (30 psi), effect equals: $\pm\left[0.15+0.15\left(\frac{30\ \text{psi}}{\text{span psi}}\right)\right]$ or $\pm\left[0.15+0.15\left(\frac{2\ \text{bar}}{\text{span bar}}\right)\right]$ in % of span
Stability	±0.04% of URL per year.

* Performance specifications are based on reference conditions of 25°C (77°F), zero (0) static pressure, 10 to 55% RH, and 316L Stainless Steel barrier diaphragm.

Performance Under Rated Conditions – All Models

Parameter	Description
Output (two-wire)	Analog 4 to 20 mA or DE digital communications mode. Options available for FOUNDATION™ Fieldbus and HART® protocol.
Supply Voltage Effect	0.005% of span per volt.
Damping Time Constant	Adjustable from 0 to 32 seconds digital damping.
NAMUR NE 43 Compliance Option	Transmitter failure information is generated when the measuring information is invalid or no longer present. Failure information is transmitted as a current signal but outside the normal 4-20 mA measurement signal level. Transmitter failure values are: ≤ 3.6 mA and ≥ 21.0 mA. The normal signal range is ≥ 3.8 mA and ≤ 20.5 mA.
SIL 2/3 Compliance	SIL certified to IEC 61508 for non-redundant use in SIL 2 related Safety Systems (single use) and for redundant (multiple) use in SIL 3 Safety Systems via Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 1998; IEC 61508-2: 2000; IEC61508-3:1998.
Lightning Protection Option (Code "LP")	Leakage Current: 10 microamps max. @ 42.4 VDC, 93°C Impulse Rating: 10/20 µ sec. 5,000 Amps (50 strikes) 10,000 Amps (20 strikes) (rise/decay) 10/1,000 µ sec. 250 Amps (1000 strikes) 500 Amps (400 strikes)

Physical and Approval Bodies

Parameter	Description
Barrier Diaphragms Material (Wetted)	316L SS, Hastelloy® C-276[2]
Gasket Ring Material (Wetted)	316/316L SS, Hastelloy® C-276*[2]
Extension Tube Material (Wetted)	316 SS[4]
Process Head and Adapter Flange Material	316 SS[4], Carbon Steel (zinc-plated)[5], Hastelloy® C-276*[6]
Process Head Gaskets	Teflon® is standard or Viton® is optional
Meter Body Bolting	Carbon Steel (zinc plated) or 316 SS (NACE) bolts.
Mounting Flange STF924, STF932 STF92F, STF93F	**Flush or Extended Diaphragm**: Zinc Chromate plated Carbon Steel[5], 304 SS, or 316 SS[4]. 316L SS ***(NOTE: Mounting Flange is process wetted.)***
Vent/Drain Valves & Plugs[1]	316 SS[4], Hastelloy® C-276[2], Monel® 400[8]
Fill Fluid	Silicone DC® 200 oil or CTFE (Chlorotrifluoroethylene)
Electronic Housing	Epoxy-Polyester hybrid paint. Low Copper-Aluminum. Meets NEMA 4X (watertight) and NEMA 7 (explosion proof). Stainless steel optional.
Process Connections All Models STF924, STF932 STF92F, STF93F	**Process Head:** 1/4-inch NPT; 1/2-inch NPT with adapter, standard option. **Flange:** 2, 3 or 4-inch Class 150 or 300 ANSI; DN50-PN40, DN80-PN40 or DN100-PN40 DIN flange. **Extended Diaphragm:** 2, 4, or 6 inches (50, 101, 152 mm) long. 3-inch, Class 150 ANSI flange.
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Mounting	See Figure 3 for typical flange mounting arrangement.
Dimensions	See Figures 4, 5, and 6.
Net Weight STF924, STF932 STF92F, STF93F	**Flush or Extended Model:** 15.5 to 35.0 pounds (7 to 16 kg) depending on flange size 14.2 to 18.4 pounds (6.5 to 9 kg) depending on flange size.

* Flush design only.
[2] Hastelloy® C-276 or UNS N10276
[4] Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.
[5] Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.
[6] Hastelloy® C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276
[8] Monel 400® or UNS N04400 or UNS N04405

NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination.

Certifications

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
FM Approvals[SM]	**Explosionproof:** Class I, Division 1, Groups A, B, C, D locations **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G locations, Enclosure Type 4X	All	All	T5 Ta = 93ºC
	Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations, Enclosure Type 4X	4-20 mA / DE	Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		4-20 mA /	Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
	Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations; Class 1, Zone 0, AEx ia Group IIC, Enclosure Type 4X / IP 66/67	Fieldbus – Entity (Not FISCO)	Vmax = 32V Imax = 120mA Ci = 4.2nF Li = 0 Pi =0.84W	T4 Ta = 40ºC T3 Ta = 93ºC
		Fieldbus – Entity (Not FISCO)	Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T4 Ta = 40ºC T3 Ta = 93ºC
		FISCO	Vmax = 17.5V Imax = 380mA Ci = 4.2nF Li = 0 Pi =5.32W	T4 Ta = 40ºC T3 Ta = 93ºC
	Nonincendive: Class I, Division 2, Groups A, B, C, D locations, Enclosure Type 4X	4-20 mA / DE	Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		4-20 mA / HART	Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
	Nonincendive: Class I, Division 2, Groups A, B, C, D; Suitable for: Class II, Division 2, Groups F&G; Class III, Division 2; Class I, Zone 2, Group IIC, Enclosure Type 4X / IP 66/67	Fieldbus – Entity (Not FNICO)	Vmax = 32V Imax = 120mA Ci = 4.2nF Li = 0 Pi =0.84W	T4 Ta = 40ºC T3 Ta = 93ºC
		Fieldbus – Entity (Not FNICO)	Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T4 Ta = 40ºC T3 Ta = 93ºC
		FNICO	Vmax = 32V Ci = 4.2nF Li = 0	T4 Ta = 40ºC T3 Ta = 93ºC

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

FM Approvals[SM] is a service mark of FM Global

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
Canadian Standards Association (CSA)	**Explosion Proof:** Class I, Division 1, Groups B, C, D locations **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G locations, Enclosure Type 4X	All	All	T4 Ta = 93ºC
	Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G locations, Enclosure Type 4X	4-20 mA / DE	Vmax = 42V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		4-20 mA / HART	Vmax = 42V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		Fieldbus – Entity (Not FISCO)	Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T4 Ta = 40ºC T3 Ta = 93ºC
	Nonincendive: Class I, Division 2, Groups A, B, C, D locations, Enclosure Type 4X	4-20 mA / DE	Vmax = 42.4V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		4-20 mA / HART	Vmax = 30V Imax = 225mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = 93ºC
		Fieldbus – Entity (Not FNICO)	Vmax = 24V Imax = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T4 Ta = 40ºC T3 Ta = 93ºC
	Canadian Registration Number (CRN):	All ST 3000 models except STG19L, STG99L, STG170 and STG180 have been registered in all provinces and territories in Canada and are marked CRN: 0F8914.5C.		

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
IECEx International Electrotechnical Commission (LCIE)	**Flameproof, Zone 1:** Ex d IIC, Enclosure IP 66/67	All	All	T5 Ta = –50 to 93ºC T6 Ta = –50 to 78ºC
	Intrinsically Safe, Zone 0/1: Ex ia IIC, Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
SAEx (South Africa)	**Flameproof, Zone 1:** Ex d IIC, Enclosure IP 66/67	All	All	T5 Ta = –50 to 93ºC T6 Ta = –50 to 78ºC
	Intrinsically Safe, Zone 0/1: Ex ia IIC, Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC
	Multiple Marking: **Flameproof, Zone 1:** Ex d IIC, Enclosure IP 66/67 **Intrinsically Safe, Zone 0/1:** Ex ia IIC, Enclosure IP 66/67 **NOTE:** The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC

- Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
ATEX (LCIE)	**Flameproof, Zone 0:** Ⓔx II 1 D, Ex tD Enclosure IP 66/67	All	All	A20 IP6X T95ºC Ta = 93ºC or T80ºC Ta = 78ºC
	Flameproof, Zone 1: Ⓔx II 2 GD, Ex d IIC, Ex tD Enclosure IP 66/67	All	All	T5 Ta = –50 to +93ºC T6 Ta = –50 to +78ºC, A21 IP6X T95ºC Ta = 93ºC or T80ºC Ta = 78ºC
	Intrinsically Safe, Zone 0/1: Ⓔx II 1 G, Ex ia IIC, Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC
	Non-Sparking, Zone 2: Ⓔx II 3 G,Ex nA IIC (Honeywell), Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FNICO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC
	Multiple Marking: **Flameproof, Zone 1:** Ⓔx II 2 G, Ex d IIC **Intrinsically Safe, Zone 0/1:** Ⓔx II 1 G, Ex ia IIC **Non-Sparking, Zone 2:** Ⓔx II 3 G, Ex nA IIC **NOTE:** The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO/FNICO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC

* Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

	Type of Protection	Comm. Option	Field Parameters	Temp. Codes
INMETRO (CERTUSP) Brazil	**Flameproof, Zone 1:** BR-Ex d IIC Enclosure IP 66/67	All	All	T5 Ta = –50 to 93ºC T6 Ta = –50 to 78ºC
	Intrinsically Safe, Zone 0/1: BR-Ex ia IIC Enclosure IP 66/67	4-20 mA / DE	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 85ºC T6 Ta = –50 to 70ºC
		4-20 mA / HART	Ui = 30V Ii = 100mA Ci = 4.2nF Li = * Pi =1.2W	T4 Ta = –50 to 93ºC T5 Ta = –50 to 63ºC T6 Ta = –50 to 48ºC
		Fieldbus (Not FISCO)	Ui = 24V Ii = 250mA Ci = 4.2nF Li = 0 Pi =1.2W	T3 Ta = –50 to 93ºC T4 Ta = –50 to 40ºC

- Li = 0 except Li = 150µH when Option ME, Analog Meter, is selected.

ST 3000 Pressure Transmitter Marine Certificate (MT Option)	This certificate defines the certifications covered for the ST 3000 Pressure Transmitter family of products, including the SMV 3000 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications. For ST 3000 Smart Pressure Transmitter and SMV 3000 Smart Multivarible Transmitter
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001
	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)

European Pressure Equipment Directive (PED) (97/23/EC)	The ST 3000 Smart Pressure Transmitters are in conformity with the essential requirements of the Pressure Equipment Directive. Honeywell ST 3000 Smart Pressure Transmitters are designed and manufactured in accordance with the applicable portions of Annex I, Essential Safety Requirements, and sound engineering practices. These transmitters have no pressurized internal volume, or have a pressurized internal volume rated less than 200 bar (2,900 psig), and/or have a maximum volume of less than 0.1 liter (Article 3, 1.1.(a) first indent, Group 1 fluids). Therefore, these transmitters are not subject to the essential requirements of the directive 97/23/EC (PED, Annex I) and shall not have the CE mark applied. For transmitters rated > 200 bar (2,900 psig) < 1,000 bar (14,500 psig) Honeywell maintains a technical file in accordance with Annex III, Module A, (internal production control) when the CE mark is required. Transmitter Attachments: Diaphragm Seals, Process Flanges and Manifolds comply with Sound Engineering Practice.
	NOTE: Pressure transmitters that are part of safety equipment for the protection of piping (systems) or vessel(s) from exceeding allowable pressure limits, (equipment with safety functions in accordance with Pressure Equipment Directive 97/23/EC article 1, 2.1.3), require separate examination. A formal statement from TÜV Industry Service Group of TÜV America, Inc., a division of TÜV Süddeutschland, a Notified Body regarding the Pressure Equipment Directive, can be found at www.honeywell.com. A hard copy may be obtained by contacting a Honeywell representative.
CE Mark	***Electro Magnetic Compatibility (EMC) (2004/108/EC)*** All Models: EN 50081-1: 1992; EN 50082-2:1995; EN 61326-1:1997 + A1, A2, and A3 – Industrial Locations
Dual Seal Certification	Dual Seal Certification based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.01 requirements without the use of additional seal protection elements.
Recommended Frequency of Calibration	Honeywell recommends verifying the calibration of these devices once every four years.
Approved Manufacturing Locations	Honeywell Process Solutions - York, PA USA Honeywell (Tianjin) Limited – Tianjin, P.R. China Honeywell Automation India Ltd. – Pune 411013 India

Foundation™ Fieldbus is a trademark of the Fieldbus Foundation.
HART® is a registered trademark of HART Communications Foundation.
Hastelloy® C-276 is a registered trademark of Haynes International.
Monel® 400 is a registered trademark of Special Metals Corporation.
ST 3000® and Experion® are registered trademarks of Honeywell International Inc.
Viton® is a registered trademark of DuPont
Teflon® is a registered trademark of DuPont.
DC® 200 is a registered trademark of Dow Corning.
FM Approvals℠ is a service mark of FM Global

Mounting

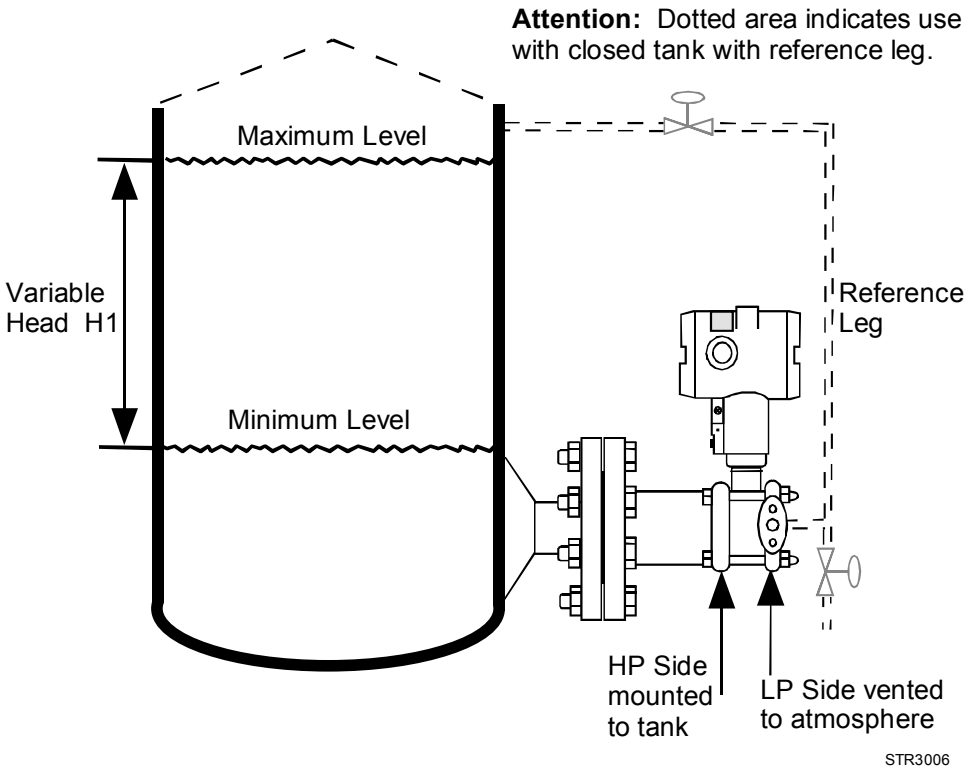
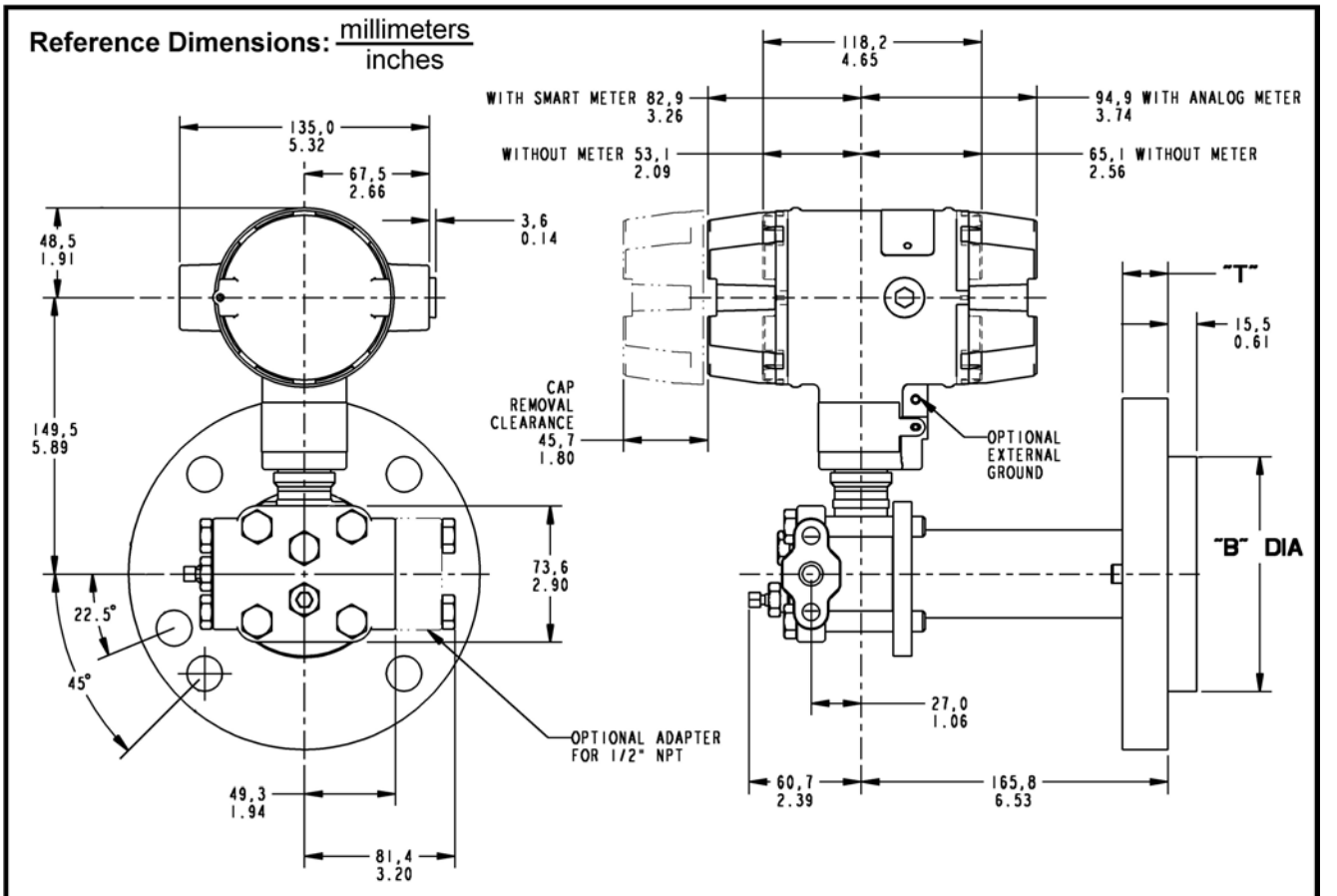


Figure 3—Typical mounting arrangement for flange mounted liquid level transmitter.

Reference Dimensions

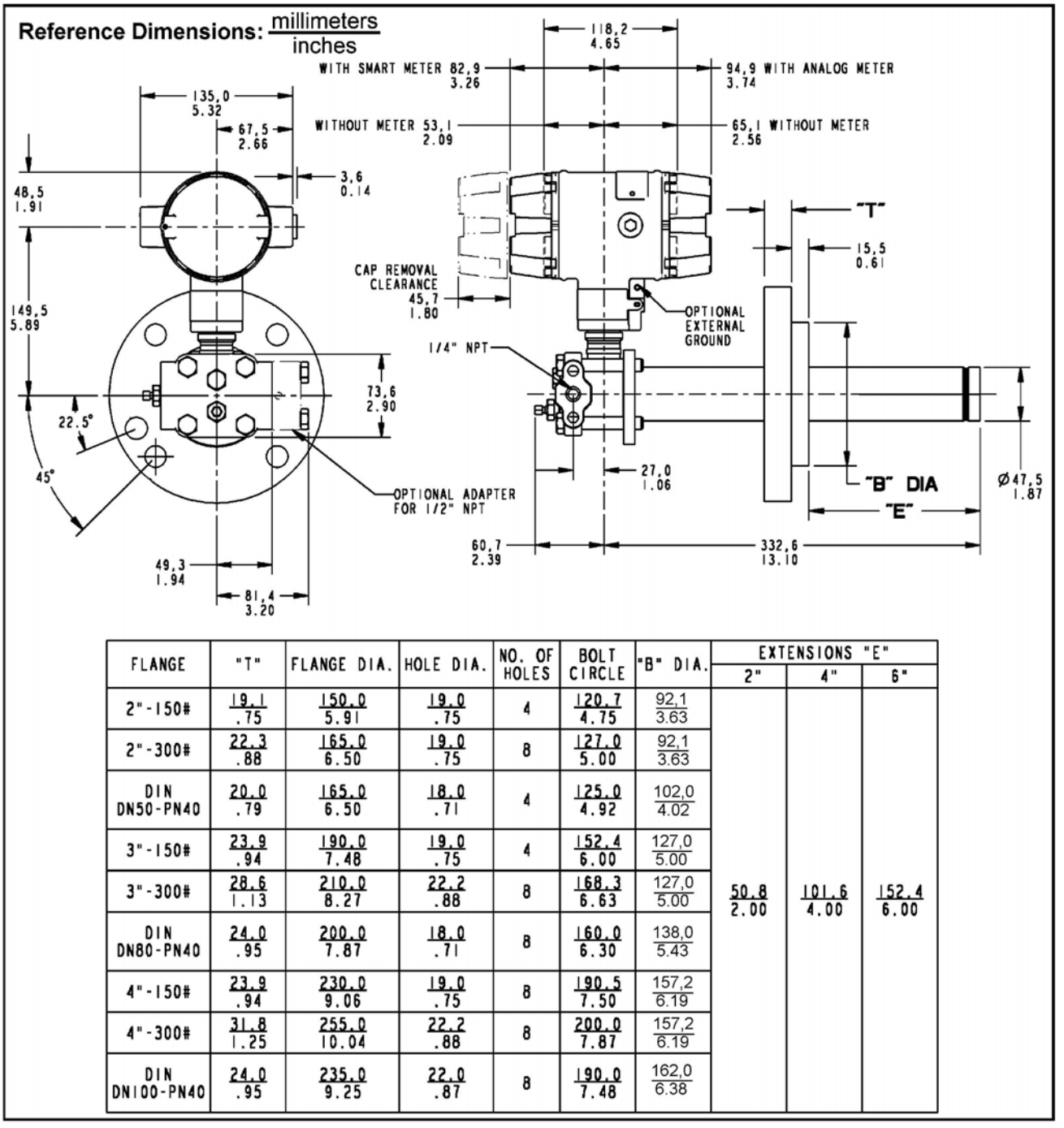
millimeters
inches



FLANGE	"T"	FLANGE DIA.	HOLE DIA.	NO. OF HOLES	BOLT CIRCLE	"B" DIA.
2"-150#	19,1 / .75	150,0 / 5.91	19,0 / .75	4	120,7 / 4.75	92,1 / 3.63
2"-300#	22,3 / .88	165,0 / 6.50	19,0 / .75	8	127,0 / 5.00	92,1 / 3.63
DIN DN50-PN40	20,0 / .79	165,0 / 6.50	18,0 / .71	4	125,0 / 4.92	102,0 / 4.02
3"-150#	23,9 / .94	190,0 / 7.48	19,0 / .75	4	152,4 / 6.00	127,0 / 5.00
3"-300#	28,6 / 1.13	210,0 / 8.27	22,2 / .88	8	168,3 / 6.63	127,0 / 5.00
DIN DN80-PN40	24,0 / .95	200,0 / 7.87	18,0 / .71	8	160,0 / 6.30	138,0 / 5.43
4"-150#	23,9 / .94	230,0 / 9.06	19,0 / .75	8	190,5 / 7.50	157,2 / 6.19
4"-300#	31,8 / 1.25	255,0 / 10.04	22,2 / .88	8	200,0 / 7.87	157,2 / 6.19
DIN DN100-PN40	24,0 / .95	235,0 / 9.25	22,0 / .87	8	190,0 / 7.48	162,0 / 6.38

Figure 4—Approximate mounting dimensions for STF924 and STF932 flush diaphragm type.

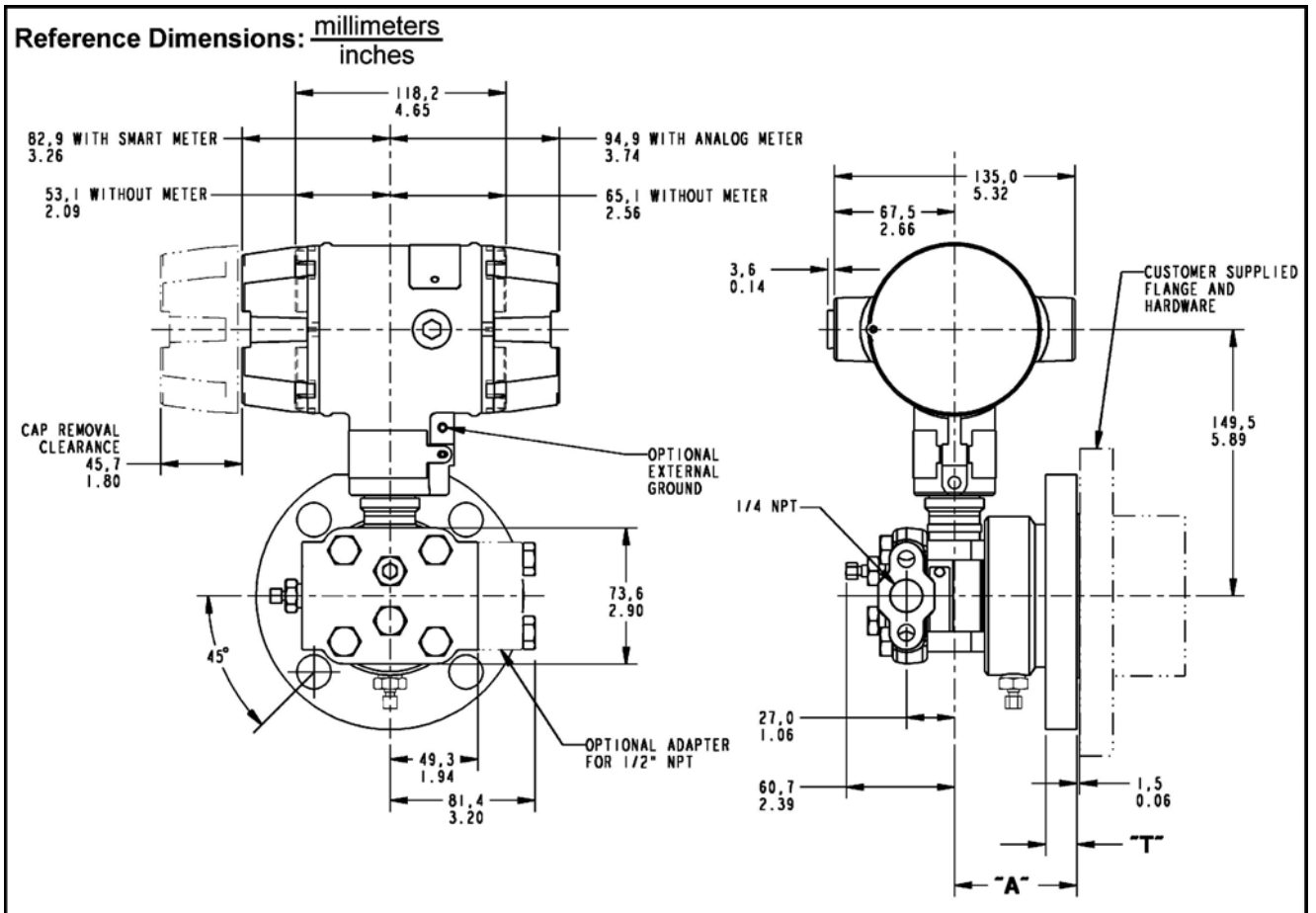
Reference Dimensions



FLANGE	"T"	FLANGE DIA.	HOLE DIA.	NO. OF HOLES	BOLT CIRCLE	"B" DIA.	EXTENSIONS "E"		
							2"	4"	6"
2"-150#	19,1 / .75	150,0 / 5.91	19,0 / .75	4	120,7 / 4.75	92,1 / 3.63			
2"-300#	22,3 / .88	165,0 / 6.50	19,0 / .75	8	127,0 / 5.00	92,1 / 3.63			
DIN DN50-PN40	20,0 / .79	165,0 / 6.50	18,0 / .71	4	125,0 / 4.92	102,0 / 4.02			
3"-150#	23,9 / .94	190,0 / 7.48	19,0 / .75	4	152,4 / 6.00	127,0 / 5.00			
3"-300#	28,6 / 1.13	210,0 / 8.27	22,2 / .88	8	168,3 / 6.63	127,0 / 5.00	50,8 / 2.00	101,6 / 4.00	152,4 / 6.00
DIN DN80-PN40	24,0 / .95	200,0 / 7.87	18,0 / .71	8	160,0 / 6.30	138,0 / 5.43			
4"-150#	23,9 / .94	230,0 / 9.06	19,0 / .75	8	190,5 / 7.50	157,2 / 6.19			
4"-300#	31,8 / 1.25	255,0 / 10.04	22,2 / .88	8	200,0 / 7.87	157,2 / 6.19			
DIN DN100-PN40	24,0 / .95	235,0 / 9.25	22,0 / .87	8	190,0 / 7.48	162,0 / 6.38			

Figure 5—Approximate mounting dimensions for STF924 and STF932 extended diaphragm type.

Reference Dimensions



DESCRIPTION	"T"	FLANGE DIA.	BOLT HOLES/STUDS		BOLT CIRCLE	"A"	"B" DIA.
			DIAMETER	NUMBER			
2"-150#	19,1 / .75	150,0 / 5.91	19,0 / .75	4	120,7 / 4.75	70,4 / 2.77	92,1 / 3.63
3"-150#	23,9 / .94	190,0 / 7.48	19,0 / .75	4	152,4 / 6.00	75,2 / 2.96	127,0 / 5.00

Figure 6—Approximate mounting dimensions for STF92F and STF93F pseudo flange type.

Options

- **Mounting Bracket (Options MB, MX, SB, SX and FB)**

  The angle mounting bracket is available in either zinc-plated carbon steel or stainless steel and is suitable for horizontal or vertical mounting on a two inch (50 millimeter) pipe, as well as wall mounting. An optional flat mounting bracket is also available in carbon steel for two inch (50 millimeter) pipe mounting.

- **Indicating Meter (Options ME and SM)**

  Two integral meter options are available. An analog meter (option ME) is available with a 0 to 100% linear scale. The Smart Meter (option SM) provides an LCD display for both analog and digital output and can be configured to display pressure in pre-selected engineering units.

- **Lightning Protection (Option LP)**

  A terminal block is available with circuitry that protects the transmitter from transient surges induced by nearby lightning strikes.

- **HART® Protocol Compatibility (Options HC and H6)**

  Optional electronics modules for the ST 3000 provide HART Protocol compatibility in either HART 5.x or 6.x formats. Transmitters with a HART Option are compatible with any HART enabled system that provides 5.x or 6.x format support.

- **Foundation™ Fieldbus (Option FF)**

  Equips transmitter with FF protocol for use in 31.25 kbit/s FF networks. See document 34-ST-03-72 for additional information on ST 3000 Fieldbus transmitters.

- **SIL2/SIL3 Certification (Option SL)**

  This ST 3000 product is available for use with safety systems. With the SL option, we are fully certified to SIL 2 capability for single transmitters and SIL 3 capability for multiple transmitter use through TÜV Nord Sys Tec GmbH & Co. KG. We are in compliance with the following SIL standards:

  IEC 61508-1: 1998;

  IEC 61508-2: 2000;

  IEC 61508-3: 1998

- **NAMUR NE43 Compliance (Option NE)**

  This option provides software the meets the NAMUR NE43 requirements for failsafe software. Transmitter failure information is generated when the measuring information is no longer valid.

  Transmitter failure values are: ≤ 3.6 mA and ≥ 21.0 mA.

  The normal ST 3000 ranges are ≤ 3.8 mA and ≥ 20.5 mA.

- **Indicator Configuration (Option CI)**

  Provides custom configuration of Smart Meters.

- **Tagging (Option TG)**

  Up to 30 characters can be added on the stainless steel nameplate mounted on the transmitter's electronics housing at no extra cost. Note that a separate nameplate on the meter body contains the serial number and body-related data. A stainless steel wired on tag with additional data of up to 4 lines of 28 characters is also available. The number of characters for tagging includes spaces.

- **Transmitter Configuration (Options TC)**

  The factory can configure the transmitter linear/square root extraction, damping time, LRV, URV and mode (analog/digital) and enter an ID tag of up to eight characters and scratchpad information as specified.

- **Custom Calibration and ID in Memory (Option CC)**

  The factory can calibrate any range within the scope of the transmitter's range and enter an ID tag of up to eight characters in the transmitter's memory.

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.
Prior to specifying or ordering a model check for the latest revision Model Selection Guides which are published at:
http://hpsweb.honeywell.com/Cultures/en-US/Products/Instrumentation/ProductModelSelectionGuides/default.htm

Model Selection Guide (34-ST-16-30)

Honeywell

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ST 3000 Smart Transmitter Flange Mounted Liquid Level Series 900

Model Selection Guide

Instructions

- Select the desired Key Number. The arrow to the right marks the selection available.
- Make one selection from each Table (I, II and IV), using the column below the proper arrow.
- Select as many Table III options as desired plus a communications option selection.
- A (•) denotes unrestricted availability. A letter denotes restricted availability.
- Restrictions follow Table IV.

Key Number		I		II		III (Optional)		IV
_ _ _ _ _ _	-	_ _ _	-	_ _ _ _ _	-	_ _, _ _, _ _	-	X X X X

KEY NUMBER

Span	Selection	Avail.	
0-4 to 0-400 inH_20 / 0-10 to 0-1000 mbar - Compound Characterized	STF924	↓	
0-1 to 0-100 psi / 0-0.07 to 0-7 bar - Compound Characterized	STF932	↓	
0-4 to 0-400 inH_20 / 0-10 to 0-1,000 mbar	STF92F		↓
0-1 to 0-100 psi / 0-0.07 to 0-7 bar	STF93F		↓

Important Note: **Base STF models no longer include a default communications option. All units now require the selection of a communication option from Table III (AN, DE, HC, H6 or FF).**

TABLE I - METER BODY

	Design	Reference Head	Vent/Drain Valve on Ref. Head [2]	Barrier Diaphragm (wetted)	Diaphragm Plate (wetted)	Extension (wetted)	Sel.		
Materials	Flush	Carbon Steel [1]	316 SS	316L SS	316L SS	N/A	A _ _	•	
				Hast C [3]	316 SS		W _ _	•	
				Hast C [3]	Hast C [3]		B _ _	•	
		316 SS [5]		316L SS	316L SS		E _ _	•	
				Hast C [3]	316L SS		X _ _	•	
				Hast C [3]	Hast C [3]		F _ _	•	
		Hast C [3, 6]	Hast C [3]	Hast C [3]	Hast C [3]		J _ _	•	
	Extended	Carbon Steel [1]	316 SS	316L SS	316L SS	316 SS	M _ _	•	
				Hast C [3]			N _ _	•	
		316 SS [5]		316L SS			R _ _	•	
				Hast C [3]			S _ _	•	
	Pseudo Flange	Carbon Steel [1]	316 SS	316L SS	N/A	N/A	A _ _		•
				Hast C [3]			B _ _		•
		316 SS [5]		316L SS			E _ _		•
				Hast C [3]			F _ _		•
Fill Fluid (Meter Body & Flange)	DC®200 Silicone						_ 1 _	•	•
	CTFE						_ 2 _	•	•
Process Connection	Reference Head			Flange					
	1/4 NPT			High Pressure Side			_ _ A	•	•
				Low Pressure Side			_ _ C		•
	1/2 NPT (with Adapter)			High Pressure Side			_ _ H	t	t
				Low Pressure Side			_ _ K		t

[1] Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use the 316 stainless steel Wetted Reference Head.
[2] Vent/Drains are sealed with Teflon® or PTFE.
[3] Hastelloy® C-276 or UNS N10276
[6] Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276

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TABLE II - FLANGE ASSEMBLY		Flange Material	Threaded Nut Ring Material	Selection	Availability STFxxx 924 932	92F 93F
No Selection		None	None	0 _ _ _ _	●	
Flange (ANSI Flanges have 125 - 500 AARH Surface Finish)	3" ANSI Class 150	Carbon Steel (non-wetted)	Carbon Steel (non-wetted)	_ 1 _ _ _	●	
	3" ANSI Class 300			_ 2 _ _ _	●	
	DN80-PN40 DIN			_ 3 _ _ _	●	
	4" ANSI Class 150			_ 4 _ _ _	●	
	4" ANSI Class 300			_ 5 _ _ _	●	
	DN100-PN40 DIN			_ 6 _ _ _	●	
	2" ANSI Class 150			_ 7 _ _ _	●	
	2" ANSI Class 300			_ 8 _ _ _	●	
	DN50-PN40 DIN			_ 9 _ _ _	●	
	3" ANSI Class 150	304 SS (non-wetted)	304 SS (non-wetted)	_ A _ _ _	●	
	3" ANSI Class 300			_ B _ _ _	●	
	DN80-PN40 DIN			_ C _ _ _	●	
	4" ANSI Class 150			_ D _ _ _	●	
	4" ANSI Class 300			_ E _ _ _	●	
	DN100-PN40 DIN			_ F _ _ _	●	
	2" ANSI Class 150			_ Q _ _ _	●	
	2" ANSI Class 300			_ U _ _ _	●	
	DN50-PN40 DIN			_ V _ _ _	●	
	3" ANSI Class 150	316 SS (non-wetted)	304 SS (non-wetted)	_ H _ _ _	●	
	3" ANSI Class 300			_ J _ _ _	●	
	DN80-PN40 DIN			_ K _ _ _	●	
	4" ANSI Class 150			_ L _ _ _	●	
	4" ANSI Class 300			_ M _ _ _	●	
	DN100-PN40 DIN			_ N _ _ _	●	
	2" ANSI Class 150			_ W _ _ _	●	
	2" ANSI Class 300			_ X _ _ _	●	
	DN50-PN40 DIN			_ Y _ _ _	●	
	Pseudo Flange on Standard DP					
	2" ANSI Class 150 without Vent/Drain	316L SS (wetted)	Not applicable	_ S _ _ _		●
	2" ANSI Class 150 with Vent/Drain			_ T _ _ _		●
	3" ANSI Class 150 with Vent/Drain			_ R _ _ _		●
	3" ANSI Class 150 without Vent/Drain			_ P _ _ _		●
Gasket Ring (wetted)	No Selection			_ _ 0 _ _		●
	Flush Design		316L SS	_ _ 1 _ _	g	
			Hastelloy® C-276[3]	_ _ 2 _ _	g	
	Extended Design		316L SS	_ _ 5 _ _	v	
Extension (wetted)	No Selection			_ _ _ 0 _		●
	Flush			_ _ _ F _	h	
	Diameter		**Length**			
	1.87 Inches (for 2", 3" or 4 " spud) [9]		2 inches	_ _ _ C _	v	
			4 inches	_ _ _ D _	v	
			6 inches	_ _ _ E _	v	
No Selection	No Selection			_ _ _ _ 0	●	●

[3] Hastelloy® C-276 or UNS N10276

[9] For part numbers and pricing information on Tank Spuds refer to page ST-95 (Supplementary Accessories & Kits).

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TABLE III - OPTIONS	Selection	STFxxx Availability 924 932	92F 93F	
Communication Options *(Must choose a communications option)*				
Analog only *(can be configured using appropriate Honeywell DE tool)*	AN	•	•	
DE Protocol communications	DE	•	•	
HART® 5.x Protocol Compatible Electronics	HC	•	•	b
HART® 6.x Protocol Compatible Electronics	H6	•	•	
FOUNDATION™ Fieldbus Communications	FF	r	r	
Indicating Meter Options				
Analog Meter *(0-100 Even 0-10 Square Root)*	ME	•	•	
Smart Meter	SM	•	•	b
Custom Configuration of Smart Meter	CI	m	m	
Local Zero	LZ	x	x	
Local Zero and Span	ZS	s	s	b
Transmitter Housing & Electronics Options				
*No housing conduit plugs or adaptors come standard with the ST 3000. For certain approval codes, you **must** select a certified conduit plug from below and it will come packaged in the box with your transmitter.*				
316 SS[5] Electronics Housing - *(with M20 conduit connections)*	SH	n	n	
316 SS[5] Electronics Housing - *(with M20 to 1/2 NPT 316 SS conduit adapter for use with FM and CSA Approval codes)*	A3	i	i	b
1/2 NPT Male to M20 Female 316 SS Certified Conduit Adapter *(ATEX, CSA & IECEx)*	A1	•	•	
1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter *(ATEX, CSA & IECEx)*	A2	•	•	
M20 Male to 1/2 NPT Female 316 SS Certified Conduit Adaptor *(ATEX, CSA & IECEx)*	A4	•	•	
1/2 NPT Zinc-plated Certified Conduit Plug *(ATEX, CSA & IECEx)*	A5	•	•	
1/2 NPT 316 SS Certified Conduit Plug *(ATEX, CSA & IECEx)*	A6	•	•	
M20 316 SS Certified Conduit Plug *(ATEX, CSA & IECEx)*	A7	•	•	
1/2 NPT Non-certified Conduit plug *(Zinc-plated carbon steel, general use)*	A8	•	•	
NAMUR Failsafe Software	NE	15	15	
SIL 2 - TÜV Certified transmitter *(requires HC or H6 and WP options)*	SL	p	p	
Lightning Protection	LP	•	•	
Custom Calibration and I.D. in Memory	CC	•	•	
Transmitter Configuration - *(non-Fieldbus)*	TC	15	15	
Transmitter Configuration - *(Fieldbus)*	FC	21	21	b
Write Protection *(Delivered in the "enabled" position)*	WP	•	•	
Write Protection *(Delivered in the "disabled" position)*	WX	•	•	b
Stainless Steel Customer Wired-On Tag *(4 lines, 26 characters per line, customer supplied information)*	TG	•	•	
Stainless Steel Customer Wired-On Tag *(blank)*	TB	•	•	
Meter Body Options (Carbon Steel standard)				
NACE A286 SS Bolts	CR	•	•	
316 SS Bolts	SS	•	•	b
B7M Bolts	B7	•	•	
316 SS[5] Adapter Flange - 1/2 NPT with CS Bolts	S2	c	c	
316 SS[5] Adapter Flange - 1/2 NPT with 316 SS Bolts	S3	c	c	
316 SS[5] Adapter Flange - 1/2 NPT with NACE A286 SS Bolts	S4	c	c	
316 SS[5] Adapter Flange - 1/2 NPT with B7M Bolts	S5	c	c	
Hastelloy® C-276[3, 6] Adapter Flange - 1/2 NPT with CS Bolts	T2	c	c	b
Hastelloy® C-276[3, 6] Adapter Flange - 1/2 NPT with 316 SS Bolts	T3	c	c	
Monel 400®[4, 7] Adapter Flange - 1/2 NPT with CS Bolts	V2	c	c	
Monel 400®[4, 7] Adapter Flange - 1/2 NPT with 316 SS Bolts	V3	c	c	
316 SS[5] Blind Adapter Flange with CS Bolts	B3	•	•	
316 SS[5] Blind Adapter Flange with 316 SS Bolts	B4	•	•	
316 SS[5] Blind Adapter Flange with NACE A286 SS Bolts	B5	•	•	b
316 SS[5] Blind Adapter Flange with B7M Bolts	B6	•	•	
316 SS Center Vent Drain and Bushing	CV	•	•	
Viton®[8] Process Head Gaskets *(adapter gaskets ordered separately)*	VT	•	•	
Viton®[8] Adapter Flange Gaskets	VF	17	17	
Services/Certificates/Marine Type Approval Options				
User's Manual Paper Copy *(Standard, HC/H6, or FF ships accordingly)*	UM	•	•	
Clean Transmitter for Oxygen or Chlorine Service with Certificate (50039190)	0X	j	j	
Over-Pressure Leak Test with Certificate (F3392)	TP	•	•	
Calibration Test Report and Certificate of Conformance (F3399)	F1	•	•	
Certificate of Conformance (F3391)	F3	•	•	b
Certificate of Origin (F0195)	F5	•	•	
SIL Certificate *(SIL 2/3)* (FC33337)	FE	22	22	
NACE Certificate *(Process-Wetted & Non-Process Wetted)* (FC33339)	F7	o	o	
NACE Certificate *(Process-Wetted Only)* (FC33338)	FG	o	o	b
Material Traceability Certification per EN 10204 3.1 (FC33341)	FX	•	•	
Marine Type Approvals *(DNV, ABS, BV, KR & LR)* (FC33340)	MT	•	•	

Table III continued next page

[3] Hastelloy® C-276 or UNS N10276
[4] Monel 400® or UNS N04400
[5] Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.
[6] Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276
[7] Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400®
[8] Viton® or Fluorocarbon Elastomer

TABLE III - OPTIONS (continued)

	Selection	Availability STFxxx 924 932	92F 93F	
Warranty Options				
Additional Warranty - 1 year	W1	•	•	b
Additional Warranty - 2 years	W2	•	•	
Additional Warranty - 3 years	W3	•	•	
Additional Warranty - 4 years	W4	•	•	

TABLE III - OPTIONS (continued)

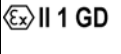
Approval Body	Approval Type	Location or Classification	Selection			
No hazardous location approvals			9X	•	•	b
FM Approvals[SM]	Explosion Proof	Class I, Div. 1, Groups A,B,C,D	1C	•	•	
	Dust-Ignitionproof	Class II, III Div. 1, Groups E,F,G				
	Non-Incendive	Class I, Div. 2, Groups A,B,C,D				
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G				
ATEX[10] (LCIE)	Intrinsically Safe, Zone 0	**Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C) Enclosure IP 66/67	3S	•	•	
	Intrinsically Safe, Zone 1	**Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C) Enclosure IP 66/67				
	Dust-tight Enclosure, Zone 0	**Ex tD A20 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) Enclosure IP 66/67	33	**24**	**24**	
	Flameproof and Dust-tight Enclosure, Zone 1	**Ex d IIC** T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C) Supply 11- 42Vdc **Ex tD A21 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) Enclosure IP 66/67				
	Non-Sparking, Zone 2	**Ex nA, IIC** T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA **Ex tD A22 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) (Honeywell). Enclosure IP 66/67	3N	•	•	
	Multiple Marking[11] Int. Safe, Zone 0/1 and Dust-tight Enclosure, or Flameproof, Zone 1 and Dust-tight Enclosure, or Non-Sparking, Zone 2	**Ex ia IIC** T4 (Ta = –50°C to +93°C); T5 (Ta = –50°C to +85°C); T6 (Ta = –50°C to +70°C); Ui = 30V; Ii = 100mA **Ex tD A20 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C)	3C	**24**	**24**	
		 **Ex d IIC** T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C) Supply 11- 42Vdc **Ex tD A21 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C)				
		Ex nA, IIC T5 (Ta = –40°C to +93°C), T6 (Ta = –40°C to +78°C); Zone 2 Supply < 42Vdc, 23mA **Ex tD A22 IP6X** T95°C (at Ta = 93°C) or T80°C (at Ta = 78°C) (Honeywell) Enclosure IP 66/67				

Table III Approvals continued next page

TABLE III - OPTIONS (continued)

Approval Body	Approval Type	Location or Classification	Selection	24 32	2F 3F
Canadian Standards Association (CSA)	Explosion Proof	Class I, Div. 1, Groups B,C,D	2J	**24**	**24**
	Dust-Ignitionproof	Class II, III, Div. 1, Groups E,F,G			
	Intrinsically Safe	Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G			
IECEx	Flameproof, Zone 1	**Ex d IIC** T5 (Ta = -40 to +93ºC), T6 (Ta = -40 to +78ºC)	CA	**24**	**24**
	Intrinsically Safe, Zone 0/1	**Ex ia IIC**; T3, T4, T5 , T6 See Spec for detailed temperature codes by Communications option			
SAEx (South Africa)	Intrinsically Safe, Zone 0/1	**Ex ia IIC** T4, T5, T6	Z2	•	•
	Flameproof, Zone 1	**Ex d IIC** T5, T6 Enclosure IP 66/67	ZD	•	•
	Multiple Marking [11] Int. Safe, Zone 0/1, or Flameproof, Zone 1	**Ex ia IIC** T4, T5, T6 **Ex d IIC** T5, T6 Enclosure IP 66/67	ZA	•	•
CERTUSP INMETRO (Brazil)	Flameproof, Zone 1	**BR- Ex d IIC** T5, T6	6D	•	•
	Intrinsically Safe, Zone 0/1	**BR- Ex ia IIC**; T4, T5, T6 (See CERTUSP certificate for detailed temperature codes by Communications option)	6S	•	•

b

[10] See ATEX installation requirements in the ST 3000 User's Manual

[11] The user must determine the type of protection required for installation of the equipment. The user shall then check the box [√] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.

TABLE IV	Selection		
Factory Identification	**X X X X**	•	•

RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
b	Select only one option from this group			
c	I	_ _ H, _ _ K		
g	I	A _ _, B _ _, E _ _, F _ _, J _ _, W _ _, X _ _		
h			I II	M _ _,N _ _,R _ _,S _ _ _ _ 5, _ _, _ _ 0 _ _
i	III	1C or 2J		
j	I	_ 2 _		
m	III	SM		
n			III	1C, 2J
o	III	CR	III	S2, S3, S5, T2, T3, B3, B4, B6, V2, V3
p	III	HC or H6 and WP	III	FF
r	III	FISCO/FNICO compliance available only with 1C	III	TC, ME or FISCO/FNICO compliance not available with 3C, 3N, 33, 3S, 2J, CA, Z2, ZD, ZA, 6D & 6S
s			III	FF, ME
t		Select S2, S3, S4, S5, T2, T3, V2, V3		
v	I	M _ _, N _ _, R _ _, S _ _		
x	III	FF, SM		
15			III	FF
17	III	VT		
21	III	FF		
22	III	SL		
24	III	This approval code requires the selection of a certified conduit plug: A5, A6 or A7		

Ordering Example: STF924-A1A-01000-HC,1C+XXXX

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For More Information

Learn more about how ST 3000 Series 900 Flange-mount Pressure Transmitters can increase performance, reduce downtime and decrease configuration costs, visit our website www.honeywell.com/ps or contact your Honeywell account manager.

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